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GEOPHYSICAL SURVEY WORK PLAN

MIDCOAST AVIATION, INC. SITE
AT
LAMBERT-ST. LOUIS INTERNATIONAL AIRPORT

JUNE 24, 1988

AMENDED JULY 8, 1988

PREPARED BY:

LAFSER & SCHREIBER, INC.
SUBSIDIARY OF
INDUSTRIAL WASTE MANAGEMENT, INC.
5050 OAKLAND AVENUE
ST. LOUIS, MISSOURI 63110

BACKGROUND

This work plan is the result of the Administrative Order on Consent for clean-up of the Mid Coast Aviation, Inc. leased property located at Lambert International Airport, which is owned by the City of St. Louis. The Order on Consent has required that a geophysical survey of the property be conducted to verify the existence or non-existence of additional buried drums. The Order requires that the work provide the use of magnetic and electromagnetic methods in delineating zones containing significant amounts of buried drums, and verification exploration such as boring or trenching to determine the nature of the buried objects. Following is a description of the equipment proposed and the methods to be used in the geophysical survey.

EQUIPMENT

1. The geophysical survey will be conducted using a Proton Precession Magnetometer Model G-856 built by EG&G Geometrics of Sunnyvale, California. The magnetometer will measure the intensity of the earth's magnetic field. Through interpretation of the magnetometer readings, assumptions can be made about what exists beneath the surface, whether it is a pipeline, a buried drum, a particular mineral or geologic structure. The G-856 is a portable, man-carried magnetometer with a built-in digital memory which stores over

1,000 readings. The memory is automatically dumped to a personal computer, which automatically records and processes the data from the magnetic survey.

2. Geonics model EN31 electromagnetic conductivity meter which is capable of measuring the earth's resistivity to a minimum depth of 15'.
3. A Case 580 E Backhoe.
4. Support equipment as required for sampling and personal protection.

PROCEDURE

Attached and marked as Exhibit AA is a site map showing the location of the Midcoast Aviation leased property. Attached and marked as Phase I Layout is the proposed geophysical survey grid for the area in question. The area proposed for the Phase I survey is a 450 ft. X 625 ft. area at the west edge of the leased property. This is the area where previous excavations have encountered buried drums.

A survey grid will be set up based on 30 ft. intervals, beginning at the southwest corner of the property and extending to the east to the existing paved area. Wooden lathes will be placed at 30 ft. intervals along this baseline. Individual stations will then be set up, beginning with station 1+00 from the south boundary of the property to the north boundary. Wood lathes will be set at 100 ft. intervals throughout the site. The entire area will be staked prior to beginning the magnetic survey.

The magnetic survey will consist of two magnetometers and the electromagnetic conductivity meter performing simultaneously. One unit will be placed in an area outside of the proposed grid for determination of background ranges for magnetic field strength. This area will be free of surface or subsurface objects, including fences, buildings, utility lines, vehicles and scrap metals which will interfere with the local magnetic fields. Since the earth's overall magnetic field changes constantly, this unit will provide the necessary readings which will allow interpretation of the results from the magnetometer and electromagnetic meter used for readings in the gridded area. A four man crew will be used to perform the actual survey. A 100 ft. cloth tape will be placed between even stations (wooden lathes between 1+00 and 7+00) as shown on the drawing. A probe located on a pole will be located at each 30 ft. interval as required. A technician carrying the meters with the digital memory will be hardwired to the probe and enter readings in the unit at each location. Should an anomaly be located at any particular station, an additional grid of 10 ft. X 10 ft. will be set up and readings taken at each grid point. A summary of the readings will be logged manually as well as recorded automatically with the instrument. This will provide us hard copy backup information should problems with automatic data interpretation arise.

The entire site will be surveyed while the second magnetometer and electromagnetic meter are providing continuous readings at our background location. Following completion of the survey, all data will then be interpreted with plots developed to show magnetic field strength throughout the surveyed area. For those locations where anomalies are present, additional investigation will be required. This investigation will include use of a backhoe for excavating trenches to locate buried metal as defined in the geophysical survey. A handheld magnetometer will be used during this excavation to further define the actual location of potential buried drums so that the possibility of puncturing drums with the backhoe will be minimized. During this excavation, all technicians will be provided with protective equipment as described in the revised site safety and health plan. Support equipment will be available on-site in the event that containment, pumping of liquids or other necessary safety considerations are required. All appropriate emergency support will also be notified and on call.

If drums are located and it is determined that the drums contain material, the project team leader will decide whether the drums should be moved to a staging area for sampling or whether they can be sampled in place. This decision will be based on actual field conditions.

REPORTS

An interim report will be prepared during this project which will define the findings of the geophysical survey. This report will be made available to the appropriate regulatory authorities prior to further field investigations. The report will include recommendations on additional investigation if required, and describe the procedures involved. After receipt of approval, any additional field investigations will be performed as approved.

A final report will then be prepared describing all field activities during the geophysical survey, including additional investigations which may be required.

FAX FACT SHEET

TO: John Chen

FAX #: (913) 236-2845

FROM: Lafser & Schreiber

Return Fax #: (314) 534-8149

DATE: 7/12/88

# of Pages: 14

(includes this cover page)

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LAFSER & SCHREIBER INCORPORATED
Environmental Consulting and Engineering

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July 12, 1988

Mr. John Chen
Waste Management Division
U.S. Environmental Protection Agency
Region VII
726 Minnesota Avenue
Kansas City, KS 66101

RE: Sampling Plan
Lambert International Airport
Consent Docket No. 88-F-0012

Dear Mr. Chen:

I am telefaxing the enclosed sampling plan and the admended Geophysical Survey Work Plan for your review. We ask for an immediate response to expedite the matter of scheduling the sampling effort with the EPA.

Should you have any questions, please feel free to contact me.

Sincerely,

for Gregory G. Haug, P.E.
Vice President

lc

encls.

cc: David Bohm
Gary Holmes

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SAMPLING PLAN

MIDCOAST AVIATION PROPERTY SITE

SECTION I

Physical activities, sampling and analytical results for samples taken at the Midcoast Aviation site since inception of current conditional construction have resulted in the following segregated areas of hazardous or assumed hazardous waste:

Area 1: Containerized hazardous liquids

(a) 76 drums of pumped liquids (mostly water)

(b) 5 drums of liquids/sludges (unknown concentrations)

Area 2: Waste piles of contaminated soils

(a) Soils contaminated with drum heels

(b) Crushed drums

(c) Soils removed from pit (two piles)

(d) Other identified soil piles and drums

SECTION II -Analytical Results to Date

Area 1: 76 drums of liquids consist of contaminated water pumped from the pit area. This liquid has exhibited the characteristic hazard class of ignitability with flashpoints as low as 118°F. Benzene, ethyl benzene and toluene have been detected in this liquid at levels less than 1 microgram per milliliter. Benzene was the lowest contaminant being detected at 15 ug/l.

Area 2: Soil samples analyzed to date have not included excavated soils other than the composite of the sides and bottom after completion of excavation activities. That composite

sample did not exhibit any significant contaminant levels or hazardous characteristics.

Other soils sampled to date at this site were background sample in the composite of surface soils taken from the excavation area prior to excavation activity.

SECTION III - Sampling Strategy

Area 1:

(a) A random selection of eight drums of the 76 drums of pumped pit liquids will be composited in a brown glass container with teflon-lined cap. Samples will be pulled twice to the bottom of each drum using a Coliwasa tube and transferred to the brown glass bottle. This composite sample will be split into two portions, with one portion retained for back-up by our firm.

Also, a volatile organic compounds sample will be taken at each of the eight drums and immediately placed on ice packs in a cooler at 4°C. These eight samples will be collected in standard 40 mil EPA approved VOA vials which have been previously baked out.

All liquid samples for shipment will be shipped as soon as possible in a cooler with sufficient ice packs to maintain temperatures as

required by appropriate sampling and analytical procedures.

(b) Each drum in this category will represent somewhat unknown but expected increased hazardous characteristics, and will be sampled separately. A sample will be drawn from each of these five drums by eight pulls to the bottom of the drum. Again, we will be using the Coliwasa tube in this procedure. This material will be composited in the same type of brown glass bottle as above, with an equal split being retained once again for back-up. Also an archieve sample of each individual drum will be collected for follow-up analysis, if so needed.

A volatile organic compounds sample will be taken from each of these five drums in the same prescribed manner as in the case of the eight drums above.

Area 2:

Sampling in Area 2 will include composite sampling of the waste pile containing drum heels as well as a composite sample of the two waste piles of soils removed from the excavation pit.

A sampling grid will be established across the two piles of removed soils. A total of four equal sample portions from each pile will be composited in a similar brown glass sampling bottle. These grabs will be accomplished with a hand auger from random grid locations and taken at approximately 1 ft. and 3 ft.

depths as allowed by given pile dimensions. All depths and locations will be recorded distinctly in appropriate field log and chain of custody forms.

A sampling grid will be established across the waste pile of soil contaminated with drum heels. Four equal sample portions will be drawn from the pile at random locations on the two dimensional grid. Two of these grabs will be taken from 1 ft. depths and two from a deeper depth, to be field determined by samplers. All depths and grid locations will be recorded as above. Samples will be expedited to the analytical lab at the completion of sampling.

Sampling as described above will be addressed for for the additional piles identified during Mr. John Chen's (EPA) site visit, dated July 11, 1988. A composite sample from four to six locations at depths of one to four feet will be taken for each pile which drums are found containing liquids, sludges, or solids that could be considered hazardous waste.

Solids in 16oz jar
2 jars
1 for organics
1 for inorganics

SECTION IV - Analytical Parameters/Sample Volumes

Sample volumes will be adequate to support the following analytical parameters for all samples oulined in this sampling plan: ignitability, reactivity, EP toxicity, corrosivity, volatile organics analysis (VOAs), bases/neutrals/acids (BNAs), heat content analysis (BTU) and PCB analysis.

all samples cool, if practical

metals — (16oz wide mouth jar) — Characteristic Waste - separate jar 16oz.

metals —
BNA —

7/8/88

SECTION V - Contract Laboratory

The EPA approved (CLP) contract laboratory of choice for the sample analyses connected with this remediation is:

Roy F. Weston, Inc. (WESCA)
7720 Lorraine Avenue
Suite 105
Stockton, CA 95210
(209) 957-3405

SECTION VI - Safety

All sampling personnel will abide by the guidelines of the site health and safety plan as previously approved. These guidelines include proper use and disposal of personal protective equipment, proper decontamination procedures and other procedures as defined in that document.

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